IN THE CLAIMS

The following is a listing of the claims in accordance with 37 C.F.R. §1.121.

1. – 60. (canceled).

61. (original) A system for providing raw mix proportioning control, comprising:

a plurality of raw material;

a plurality of transport belts for transporting the plurality of raw material;

a measuring device that measures the composition of the plurality of raw material transported by the plurality of transport belts;

a raw mix proportioning controller, coupled to the plurality of transport belts and the measuring device, for controlling the proportions of the plurality of raw material transported along the plurality of transport belts, wherein the raw mix proportioning controller comprises a fuzzy logic supervisory controller tuned to optimize tracking of a plurality of target set points specified for the plurality of raw material.

62. (original) The system according to claim 61, wherein the fuzzy logic supervisory controller comprises a fuzzy logic knowledge base and an interpreter.

63. (original) The system according to claim 61, wherein the fuzzy logic supervisory controller comprises a plurality of low level controllers.

64. (original) The system according to claim 63, wherein the fuzzy logic supervisory controller comprises at least three pairs of low level controllers.

65. (original) The system according to claim 64, wherein one pair of the at least three pairs of low level controllers receives lime saturation factor as the input, a second pair of the at least three pairs of low level controllers receives alumina modulus as the input, and a third pair of the at least three pairs of low level controllers receives silica modulus as the input.

66. (original) The system according to claim 65, wherein each low level controller in a pair of the at least three pairs of low level controllers generates a change in a control action as an output.

67. (original) The system according to claim 66, further comprising a summer coupled to the at least three pairs of low level controllers for summing all of the change in control actions generated therefrom.

68. (original) The system according to claim 67, wherein the summer comprises at least three summers, wherein a first summer sums a first component of the change in control actions from each of the at least three pairs of low level controllers, a second summer sums a second component of the change in control actions from each of the at least three pairs of low level controllers, and a third summer sums the change in control actions from both the first and second summer.

69. (original) The system according to claim 63, wherein each of the plurality of low level controllers are fuzzy logic proportional integral controllers.

70. (original) The system according to claim 61, wherein the tuned fuzzy logic supervisory controller is tuned with a plurality of fitness functions.

71. (original) The system according to claim 70, wherein the tuned fuzzy logic supervisory controller is further tuned with a genetic algorithm.

72. (original) The system according to claim 61, wherein the plurality of target set points are physical properties comprising lime saturation factor, alumina modulus and silica modulus.